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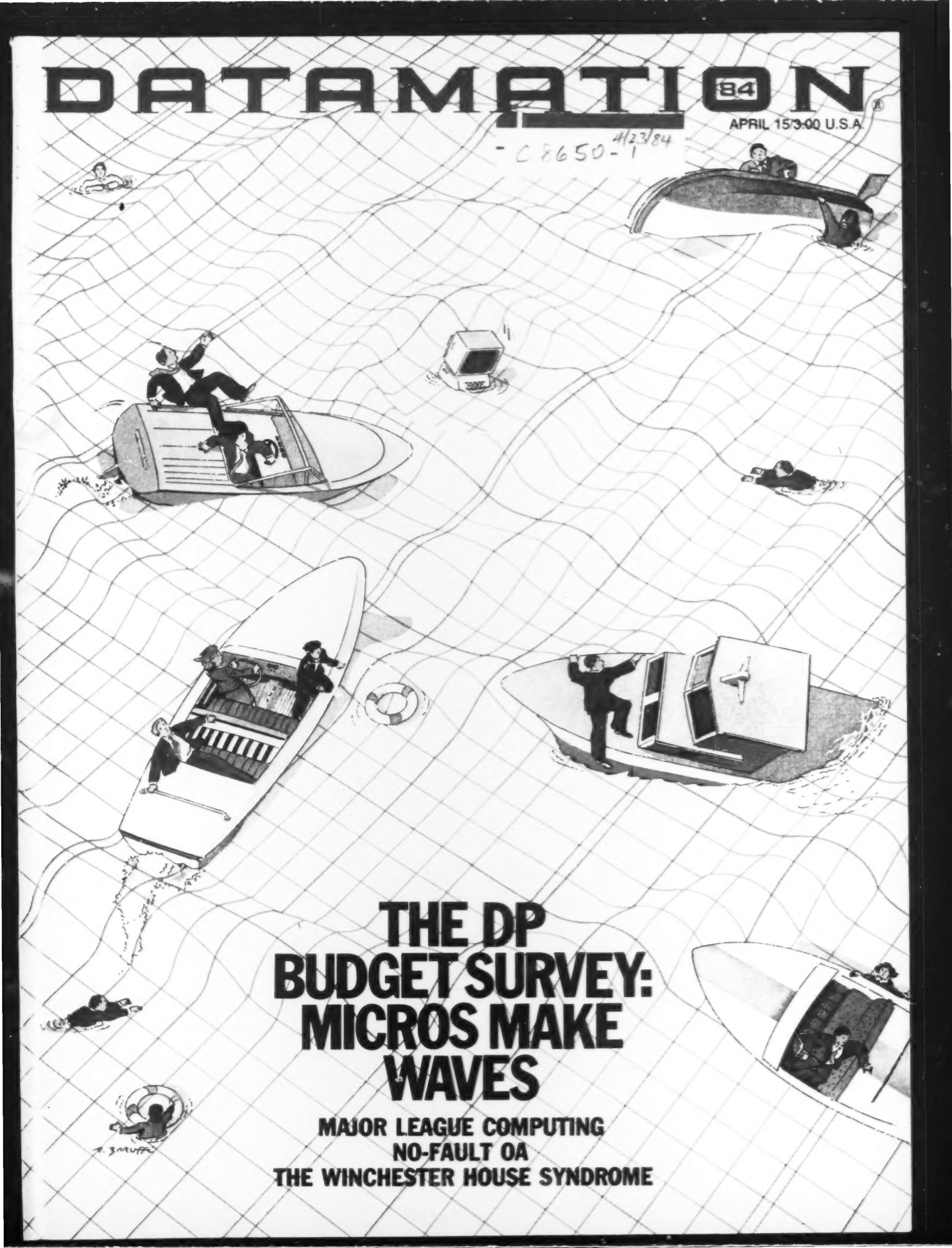

THE DP BUDGET SURVEY: MICROS MAKE WAVES

MAJOR LEAGUE COMPUTING
NO-FAULT OA
THE WINCHESTER HOUSE SYNDROME

DATAMATION®

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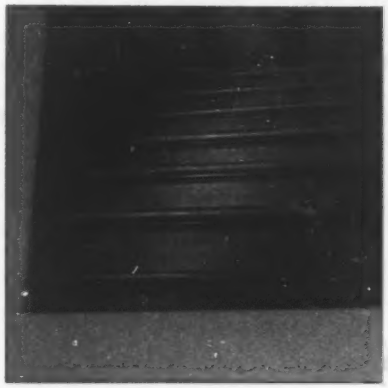

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COVER ILLUSTRATION BY ANDREA BARUFFI/ GRAPHIC BY CYNTHIA STODDARD

The ripple effects of personal computer spending are spreading throughout the shop.

THE DP BUDGET SURVEY: PCS MAKE WAVES

by Larry Marion

Several hundred lending officers, corporate finance experts, and other banking professionals are learning how to use personal computers at Continental Illinois National Bank, Chicago, this spring, not because of a virulent case of micro fever but at the behest of the data processing department. "We are unleashing 200 personal computers in the bank to cut the applications backlog," vice president for systems Edward M. Boss says with no small amount of trepidation. "We are anticipating, hoping, praying that the number of requests for mainframe data massaging will go down and we will then be able to reallocate our dp resources."

As the new move by the nation's seventh largest bank suggests, data processing managers are entering the third phase of the sometimes stormy relationship with personal computers. The first phase can be described as indifference bordering on contempt, as micros were purchased by end users without the permission or knowledge of the dp department. Phase two began when the micro users went, floppies in hand, to the dp department asking for help—access to mainframe databases, communications with other pcs, etc.—or seeking answers to questions like, "How do I copy a disk file?" Phase three, now under way at Continental and hundreds of other companies, is the active purchase of micros by the dp department to cut dp costs, increase productivity, and, in general, strengthen the corporation. The pesky microcomputer mosquito has metamorphosed into a butterfly.

Evidence that corporations are moving into phase three by the hundreds comes from a new DATAMATION survey of data processing departments. Late last year 1,083 dp managers from across the country filled out a questionnaire outlining their current budget and estimated 1984 spending. The mean dp budget increase will be 7.2% in 1984, with a range of minus 4% to 21% depending on industry. The really startling numbers, though, are those which indicate the extent of microcomputer spending by the dp department: for every dollar that a dp manager will spend this year on mainframes, another 50 cents will be spent on personal computers. In other words, mean spending for mainframes was 10.1% of the total budget, compared with 4.9% for personal computers.

RIPPLE EFFECT IN BUDGET

Furthermore, the rise of the micro on the dp manager's shopping list has ripple effects throughout the budget. Spending for personnel, outside services, and other hardware categories is under pressure, at least in part because of the influx of personal computers from IBM, Apple Computer, and dozens of other companies. "Personnel used to be one third of the Continental's dp budget, which is $115 million this year," explains Boss, "but it is now about 45%. We hope it will plateau at that level, and then decline if the pc phenomenon really takes off."

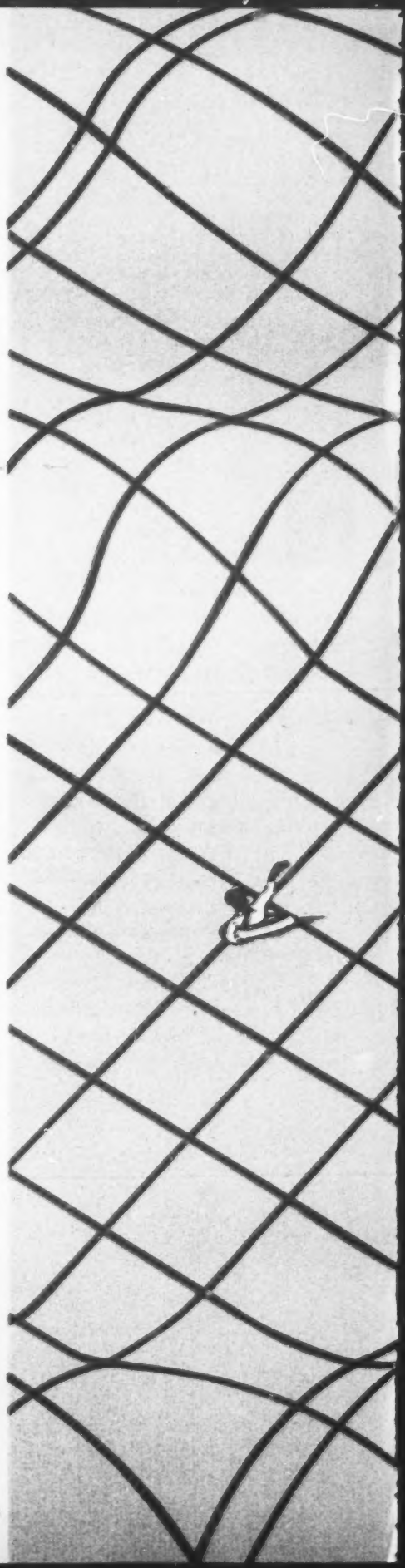
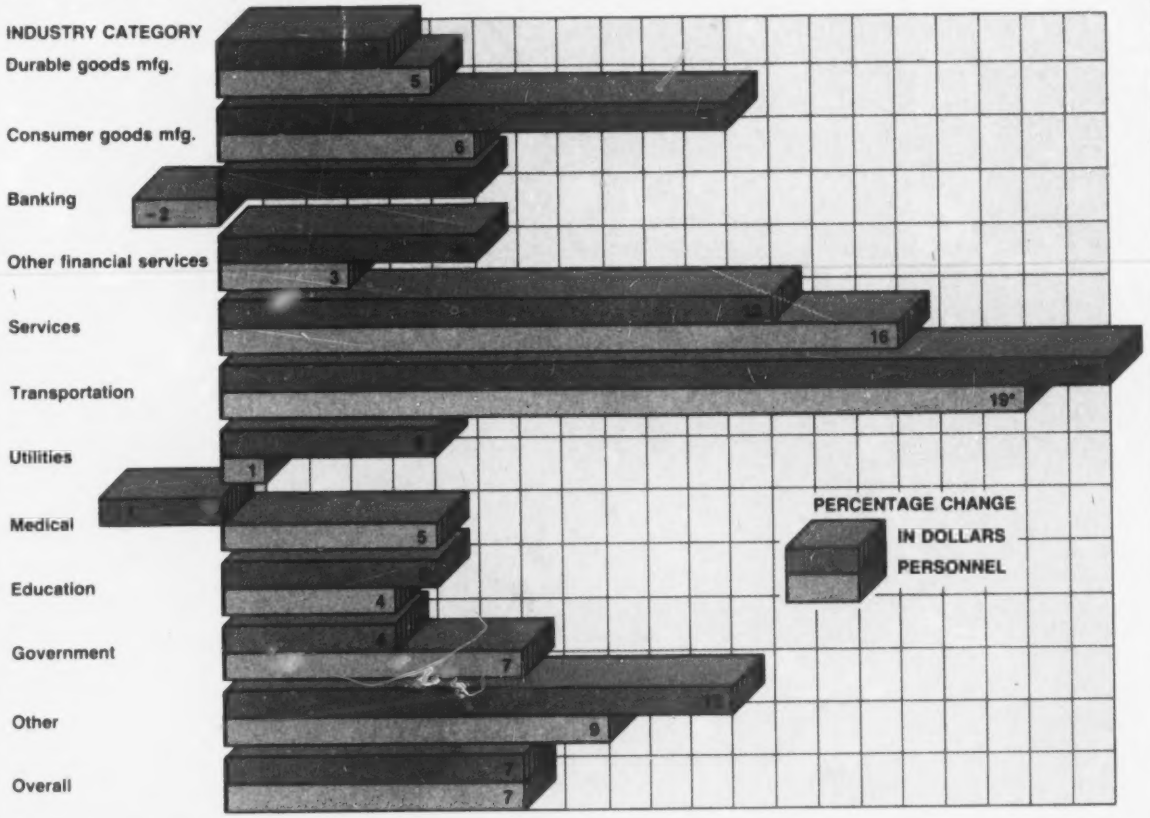


ILLUSTRATION BY ANDREA BARUFFI

FIG. 1

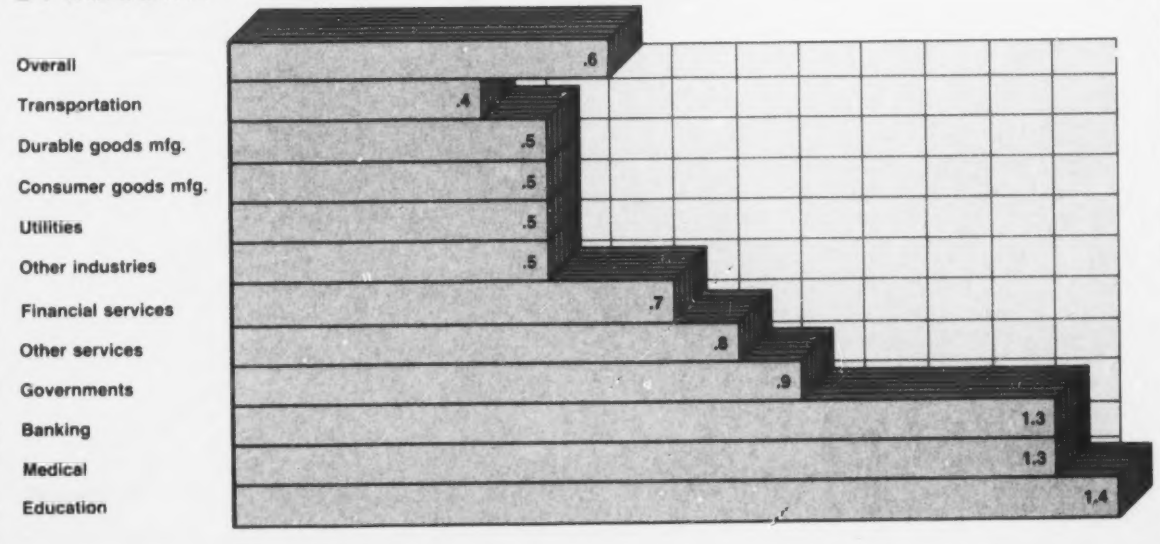
1983 VS. 1984 DP DOLLARS AND PERSONNEL BUDGET CHANGES



*Only 19 companies report

FIG. 2

DP BUDGETS AS PERCENTAGE OF REVENUES, BY INDUSTRY



THE BIG PICTURE

Determining data processing budget priorities must make MIS managers feel a little like President Reagan confronting the federal budget—there are few real choices when it comes to priorities. In Washington these days the Social Security Department budget is sacrosanct, and dp managers know that cutting the personnel ranks is impossible. Each line item in the federal or dp budget has its special interest groups fighting to increase its funding and prevent cuts. "MIS managers have had to make some hard choices," notes David Dell, director of research services for dp consultants at The Diebold Group, New York City.

Coming out of the 1981–82 recession, dp managers were able to achieve modest gains in the budget. All but one industry category show increases for dp spending (see Fig. 1). The 7.2% average masks the wide differences in the average rate of increase, from minus 4% for medical centers to 21% for transportation firms. The variation reflects the differing rates of recovery in sectors of the economy.

The 12% increase in dp spending by consumer goods manufacturers reflects sharply increasing revenues from sales of automobiles, appliances, clothing, and other personal items. As employment increases and unemployment declines, consumer spending soars. The companies that make the machinery used by consumer goods manufacturers won't see a surge of orders until the car and appliance factories are capacity constrained. The 3.8% increase in dp spending in 1984 by the durable goods companies will pale beside the increases expected in 1985.

The anomaly in the survey was the medical sector. The estimated 4% decline in data processing budgets may not reflect what those dp managers think will happen this year, but what they told their bosses. "Due to new government policies on cost controls, many hospital administrators made blanket statements to cut costs by a certain percentage across the board," explains Sheldon I. Dorenfest, a medical technology consultant in Highland Park, Ill. "We don't believe that they will be able to reduce their costs. For the hospitals that do their own systems development, their budgets will definitely increase, but at a slower rate than in the past. They may be answering the questions with their wishes and hopes, but the results will be different."

At the same time that dp managers are juggling the cost cutting directives, the computer center is being viewed as an increasingly important part of the organization's strategic planning. Information processing is a new mandate that forces the dp manager to shoulder a whole new set of responsibilities, and sometimes a small increment in funding.

The traditional measure of dp's importance to the overall organization is dp spending as a percentage of total revenues. The 1% of total revenues guideline reflected industrial organizations, with financial institutions at a higher level and low-tech fields like food wholesalers at the lower end of the spectrum, say .3%. Because of the statistical bias of the DATAMATION survey sample—50% of the dp shops were small, with an annual budget of $500,000 or less—the dp spending percentages in the table underestimate spending at large organizations. Adding three or four tenths of a percentage point to the figures in the chart will indicate the kind of dp spending that goes on in large companies with large dp centers.

Indications that the 1% tradition is now on the low end come everywhere. "The average large brokerage firm spends 2% of its revenues on dp in a typical year, but 1983 wasn't typical," explains a highly regarded dp consultant to Wall Street. "The boom in sales in much of '83 was not matched by huge spending increases becaues it takes a while for equipment to be delivered and installed. That's part of the reason why the industry made sinful profits in 1983—some of the dp costs didn't show up until this year." Securities firms such as Merrill Lynch and Shearson are spending hundreds of millions of dollars on new computer centers to handle the growing load of transaction processing requests, resulting in part from the increased stock market trading. Only a few years ago the industry thought that its dp capabilities were more than adequate, with on-line systems capable of processing the trading of 150 million shares a day on the New York Stock Exchange. Within six months of the bull market last year, plans were under way to increase capacity by 67%, to 250 million shares over the next few years.

In the past, Wall Street added clerks to handle the paperwork blizzard, but employment ranks are not growing as fast as in earlier boom times. Dp spending has increased at a 20% annual clip for the past four years, though. "Nowadays more and more of the costs of running the house are embedded," notes the MIS vice president of a major New York brokerage firm. "You can't lay off computers, like you could lay off clerks in the old days."

The rising importance of MIS is seen even in areas once considered to be dp backwaters. Stephen Adams of Jewel Cos. in Chicago says that dp spending, currently more than $20 million, is rising at a faster rate than revenues because "there is an acknowledgment that there is leverage to be gained with information." Using the product sales information stored in the checkout counter scanners is a tempting target of the new information revolution at the supermarket, he suggests. "We are trying to find ways of using the information."

—L.M.

Investment in personal computers now ranks as the fifth largest spending item, after personnel, mainframes, minicomputers, and supplies. It may seem hard to believe, but in general, the mean budget allocation for personal computers now exceeds that of terminals, desktop systems, or mass storage devices and is triple the level of 1981.

The absolute numbers are not as absolute as they look. Several reasons account for this. Some dp departments do not have a pc budget category, as the expenditures are funded out of end-user budgets. The numbers do give a strong indication, though, of a trend toward consolidation of micro hardware already in the company: the 4.9% overall mean for pc spending in 1984 is the same level as in 1983. "1984 will be a year of digestion," claims David Dell, director of research at The Diebold Group, New York. "Dp managers are trying to figure out what they want to do and present a long-term plan because the numbers are getting so large. It is harder to justify the ad hoc spending of the past."

Spending for pcs and the degree to which they are acknowledged as friends, not foes, of the dp department, varies from industry to industry, but evidence of the new pc-dp relationship permeates the corporate landscape. "Between now and 1990," forecasts Dell, "corporations will spend between $12 billion and $20 billion on personal computers." A few examples:

- An estimated 25% of all potential users in the securities brokerage business are already sitting behind a PC, Apple, or Clone keyboard, according to industry observers, and corporate purchases are starting to supplant out-of-pocket spending by brokers, investment bankers, and other financial industry professionals. "There is this incredible infection of micros in our industry," gushes Pim Goodbody, Jr., vice president of the Securities Industry Association (SIA), New York City. "It is going like gangbusters." At a recent SIA conference on micros, rumors swirled around the exhibit hall that industry giant Merrill Lynch & Co. would buy an IBM PC for each of its 10,000 brokers not already equipped, beginning in 1985.
- "Hospitals had been slow to pick up on the use of personal computers, but that is rapidly changing," contends Sheldon I. Dorenfest, founder of dp facilities manager Compucare and now head of a medical technology consulting firm in Highland Park, Ill. "Personal computers are having a tremendous impact in hospitals. There is a recognition by dp managers that they are an inexpensive solution to intradepartmental needs and enable hospitals to defer big cpu purchases."
- Areas once considered dp backwaters, such as wholesalers and retailers, are rapidly gearing up. "We are spending a sig-

Merrill Lynch may buy a PC for each of its 10,000 brokers not already equipped.

nificant amount of money towards understanding how pcs can be used in stores," says Stephen Adams, corporate vice presdent for information systems at supermarket and drug store chain Jewel Cos. Inc., Chicago.

MICROS SWEEP DP DIVISIONS

It becomes apparent then that microcomputer investments by the dp department are more than just a narrow-minded pursuit of lower labor and equipment costs. An all-encompassing productivity enhancement mission by the entire corporation is being implemented with micros. The impact of pcs on white collar productivity has now swept up the dp department. "Our rule of thumb three years ago was that a simple machine with VisiCalc would pay for itself in six weeks to three months," recalls John Gosden, vice president and technology officer for the Equitable Life Assurance Society of the United States, New York City. Last year Equitable bought 200 IBM PCs for its agents and middle managers, and another 200 are on order for 1984. A typical productivity and efficiency benefit: the end of the year closeout of the books was a nightmare of late night sessions with a pencil and a spreadsheet, but no more. With Lotus Development Corp.'s 1-2-3 integrated spreadsheet package and the PCs, the numbers from the various offices are consolidated without the aggravation of the past.

Increased productivity also comes from the pc effect on the invisible backlog—the data processing jobs users never bothered requesting because the computer center was always two years behind schedule. "Projects done with pcs were never done on the mainframe because users couldn't get the dp shop to produce," concedes Robert E. Kistner, vice president of information systems and services at Combustion Engineering, Stamford, Conn. "So 1-2-3 has done a lot of things to improve the productivity of people" (see "The Micros vs. the Applications Logjam," January, p. 96).

Dp managers who previously fought against the arrival of an IBM or Apple now concede that, for the good of the corporation, end users should be given the opportunity to muddle through poor documentation, to troubleshoot bugs, and to endure the tedium of source data entry. Says the MIS vice president of a major New York City financial services company, "We are discouraging the sales force from buying personal computers because we can give them personal *computing* without the hassles of a pc, but we would rather have them buy a pc than use pencils."

Of the industry segments where pc spending continues unabated, nowhere is the frantic rush toward the "one person, one box" goal more pronounced than in financial services. The 7.4% of their budgets set aside for pc spending puts the little number crunchers at the same priority level as minicomputers and just a shade under the position of mainframes. Productivity and cost control are only part of the explanation for Wall Street's pc bullishness.

FIG. 3

THE TYPICAL DP BUDGET

BUDGET ITEM	PERCENTAGE 1983	1984
Mainframe cpus	11.1	10.1
Minicomputers	9.4	8.4
Mass Storage	3.0	2.9
Terminals	4.7	4.5
DeskTop Systems	2.0	1.7
Personal Computers	4.9	4.9
Consultants	1.8	1.6
Outside Services	4.3	3.3
Data Communications	2.7	2.9
Applications Software	4.3	4.6
Systems Software	2.6	2.8
Supplies	6.2	6.1
Personnel	29.4	28.4

Note: Percentages do not add up to 100 because of "other" components of dp budgets not specified, such as cost of energy and office space.

In the past year or so, brokerage firm managers realized that they were in a pc race in the intense competition for the best securities salesmen. Offering to buy a computer for a salesman is now an important inducement. "The firms must work to get salesmen and keep them, and part of the job requirement is for technology," notes Goodbody of the SIA. "Firms are trying to do a lot of things to keep people, and having to keep up with the technology to keep people is sending shivers through the executive ranks." They keep writing the checks, though.

The impact of personal computers on the rest of the dp budget menu is graphically illustrated by the sharp drop in the portion of spending for minicomputers. In the financial services sector, the minicomputer line lost four percentage points, to 7.4% of the total budget. This was the largest single change in the dp budget universe. Part of the change can be attributed to shifting technology—while a Tandem fault-tolerant processor may appear to be a minicomputer in a dedicated transaction processing application, a string of 16 Tandem processors cannot easily be called a minicomputer. "At that point, it's a hell of a machine," says a Wall Street MIS executive. "Meanwhile, traditional minicomputer applications can be embodied in high-end micros like the Motorola 68000, while a VAX 11/782 solves mainframe problems."

At Coulter Electronics, Hialeah, Fla., MIS director Michael DiBeneditto reports that several minicomputer-based applications are being transferred to either micros or mainframes. Records of a leasing subsidiary are moving to a micro, while general data processing chores are being restored to a mainframe after several years on a distributed dp network. "We save money with centralized applications," he explains, "even though it makes for a higher terminal budget."

Technological evolution is also behind the decline of the minicomputer. Ddp, timesharing, and other network approaches to computing power are an anachronism, notes the New York MIS executive. "They were created when cpu power was expensive and communications cheap, but now the scarce resource, MIPs, is common and the other is dear." And while many large corporations equipped their information centers with minicomputers to handle the load of end-user applications requests, a shift to higher capacity mainframes is under way to accommodate all the computer curious popping out of the woodwork. "The minis that ran our info centers are inadequate for the role, and are being replaced with mainframes," notes Gosden of Equitable Life.

The technology evolution of lower-priced cpus also continues to eat away at the service bureaus, despite their efforts to join the microcomputer bandwagon ("Bureaus Sell Micros," April 1983, p. 134). "We've pretty much stopped using remote computing services," remarks Kistner of Combustion Engineering. "Most of our work is now done in-house, and pcs will help stem the tide still further." Adds Gosden of Equitable Life, "Pcs may have eaten severely at our timesharing budget." Apparently Equitable is profiting from pcs in two ways–its employees are working at home on their "off hours" and using relatively cheap pc power instead of expensive computer time. "Once people are on pcs, they do not want to deal with outside vendors," explains Nick Martino, manager of systems planning at Raymark Corp., Trumbull, Conn. "They just want to tinker with the numbers on their own."

HOSPITALS INVEST IN SYSTEMS

Overall, service bureaus enjoyed a 4.3% chunk of the mean dp budget in 1983, but that segment shrinks to 3.3% this year. Personal computers are only part of the story. The most dramatic decline in outside bureau spending—more than two percentage points—occurred in the medical sector, which nevertheless continues to be one of the biggest users of such services. "More hospitals are trying to

"Fifteen years ago we had 80 people doing data entry. Now we have 20."

FIG. 4

PERCENT CHANGES IN DP BUDGET ALLOCATIONS, 1983 TO 1984, BY INDUSTRY*

BUDGET COMPONENT	OVERALL		DURABLES		CONSUMER		BANKS		FINANCIAL SERVICES	
	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
Mainframes	11.1	10.1	11.3	9.4	12.8	11.7	12.5	13.6	9.0	7.6
Minicomputers	9.4	8.4	9.6	8.4	7.9	7.2	4.1	4.4	11.5	7.4
Storage	3.0	2.9	3.5	3.9	2.5	2.5	3.7	3.9	2.8	2.8
Terminals	4.7	4.5	5.1	4.5	3.6	3.0	3.5	4.0	3.8	3.5
Desktop Systems	2.0	1.7	1.4	1.4	2.4	1.9	.1	.7	2.0	2.8
Personal Computers	4.9	4.9	3.2	3.4	2.4	2.7	1.0	1.4	6.7	7.4
Consultants	1.8	1.6	2.0	1.6	1.2	.8	3.7	3.8	1.4	1.3
Outside Services	4.3	3.3	2.9	2.3	3.3	2.0	2.6	2.6	6.2	5.1
Data Communications	2.7	2.9	3.1	2.9	3.4	3.0	4.8	5.4	3.5	3.8
Applications Software	4.3	4.6	4.8	5.0	4.9	4.2	3.4	4.8	2.9	4.2
Systems Software	2.6	2.8	2.9	3.1	2.2	2.1	1.9	2.0	2.9	2.8
Supplies	6.2	6.1	6.5	6.0	7.4	7.7	6.5	7.1	6.4	7.5
Personnel	29.4	28.4	29.0	28.0	32.1	31.4	27.8	29.0	23.5	25.1

*Budget percentages do not add up to 100 because of to deletion of miscellaneous categories like energy and office space costs.

FIG. 5

ESTIMATED DP SPENDING OUTSIDE OF DP BUDGET

	PERSONAL COMPUTERS	OTHER H'WARE	S'WARE	PRO-GRAMMERS	SERVICES	CONSULT-ANTS
Mean	$64,800	82,300	47,100	59,200	72,400	34,900
Median	$17,500*	25,000	7,000	25,000	24,000	17,500

*Approximate

bring things in-house," explains consultant Dorenfest, as new government regulations further tighten the purse strings of hospital administrators. Hospitals are big users of remote services because of their large system and complex software requirements. As cpu costs decline and the volume and quality of hospital management software increase, more hospitals are making the internal investments. Software spending by hospitals will increase to 7.1% of the 1984 budget from 6% last year (see Fig. 1). "Until recently, the movement toward in-house systems was slowed by the lack of good software, but that is changing," he says, and predicts an accelerating decline for outside services, based on a survey of 250 hospitals.

Changes to the portion of the dp budget devoted to personnel stem from a number of factors, and the microcomputer invasion cuts both ways. Managers and professionals analyzing data on terminals, desktop office automation systems, or pcs are rapidly depleting the data entry ranks. "Fifteen years ago we had 80 people doing data entry," relates W.F. Weprin, manager of information sytems for Peoples' Gas, Chicago. "Now we have 20 people and it's declining fast, as we make more and more use of source data entry." Adds Dell of The Diebold Group, "There are far more people doing data entry now than in the past, but they are not in the dp department."

And, as many dp managers feared, while phase two of the microcomputer influx progresses, demands for help from new end users leads to more, not less, personnel expenses in the short term. "It is taking me more time to service these people," cries Martino of Raymark. He rapidly ticks off the costs of new personnel: "I need a systems programmer to answer questions, an applications programmer for downloading data, and a trainer. And, to top it all off, I'm starting to see more end-user requests for highly specialized data crunching programs." As his pc users explore the powers of an electronic spreadsheet on a microprocesor, they approach the limits of capacity relatively quickly. Then they come to him. The New York City MIS vice president sums up the phenomenon by saying, "The dp center is losing a lot of the simple applications development requirements to end-user microcomputing, but gets stuck with all the big problems."

To avoid the expense of adding systems development programmers and analysts and inflating the personnel costs, many dp managers are flocking to canned software and applications development tools. The applications software budget component is rising to 4.6% of the 1984 total from last year's 4.3% because it is cheaper to buy a package than to built it from scratch, according to some.

"In three years nobody will be doing program development work," declares Kistner of Combustion Engineering. "Due to the modular nature of fourth generation packages, it is easy to modify them for customized services. I can't afford to create from scratch an MRP program or other general purpose applications software. The days of the $4 million to $5 million cost of homegrown software are over." While others disagree, saying that the cost of modification and customization necessary to match a product to a company offset the initial purchase price, Kistner is the first to admit that some of the productivity aids on the market are less than ideal. "The advent of VM/CMS to improve program testing hasn't had a hell of an impact on code costs," he says. "If you look at total system development costs, the savings haven't occurred."

General business conditions are leading to the soaring software budgets in certain industries facing new markets and competitors. Banks can now sell stocks, and stockbrokers have offered quasi-savings accounts for several years, so the software budgets and software development personnel centers are

OTHER SERVICES		TRANSPORTATION		UTILITIES		MEDICAL		EDUCATIONAL		GOVERNMENTAL		OTHER	
1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984
5.9	6.2	11.1	9.9	18.2	15.2	13.1	12.1	11.8	10.8	15.1	13.5	9.9	9.3
9.4	7.2	10.7	7.6	4.5	4.2	9.8	8.2	11.9	11.0	7.0	7.9	10.3	9.9
2.4	2.5	3.3	3.0	2.1	3.1	4.7	4.0	3.0	2.0	3.2	2.9	2.8	2.6
5.6	4.7	6.6	5.6	6.0	7.7	4.0	3.8	3.9	4.3	6.6	5.9	3.9	4.0
2.3	2.4	.1	.1	.1	.2	.4	.4	1.7	1.6	1.5	1.6	3.5	2.3
9.9	9.1	.5	.5	.7	1.8	3.0	1.8	6.0	5.5	2.4	3.1	6.3	6.6
1.4	.9	1.8	1.6	1.1	.8	1.5	1.3	.7	1.0	1.0	.7	2.8	2.6
4.4	3.5	4.3	1.8	1.1	1.4	12.8	10.5	4.1	2.5	7.2	5.7	3.1	2.6
2.8	3.1	2.1	2.6	1.7	3.0	1.7	1.5	1.6	2.1	3.3	3.2	2.5	2.8
6.1	5.1	2.5	2.8	5.4	4.1	4.3	4.6	3.4	4.3	4.3	4.6	3.7	4.6
2.9	2.7	4.4	5.5	3.5	3.3	1.7	2.5	3.0	3.5	2.7	2.5	2.2	2.5
5.8	6.4	4.9	4.6	7.2	7.6	4.8	4.4	8.3	8.2	4.8	4.8	5.6	5.3
27.9	27.3	38.2	33.0	28.2	27.3	30.6	27.2	29.1	26.6	30.7	30.8	29.3	28.2

climbing faster than the federal deficit. "In banking, we have to stay competitive, so to be on the leading edge we have to develop software internally," explains Ed Boss of Continental Illinois. The mean applications software budget allocation for financial services companies responding to the survey was 4.2%, up about 50% from the 1983 level; for banks, the increase was almost as large. Similarly, personnel costs are also up a few percentage points.

REDUCING SUPPLY COSTS

Pressure to control costs during the recession and in the current drive for profits is focusing much attention on a more mundane topic than microcomputers or software productivity aids. Dp managers report a growing effort to control the cost of paper, ribbons, magnetic media, and other supplies. A slight decline in the portion of the total dp budget going to the vendors, reported by the survey respondents, is the result of a variety of housekeeping efforts.

Kistner of Combustion Engineering reports a 15% to 20% savings on corporate paper costs by arranging for volume purchases from a limited number of vendors. Weprin of Peoples' Gas says he cut the corporate computer paper budget by 50% by installing duplex printers. And anybody looking for a roll of 8½ by 11-inch printout at electrical equipment maker Square D of Palatine, Ill., will have a hard time finding one. Manager of MIS administration John Stenger cut back on the number of inventory items in his supply rooms last year, dropping the standard-size paper. Volume purchases of the longer 8½ by 14–inch forms saves the company money, though it must make the letter-size file cabinets a bit bulkier. His defense: "Supplies are a variable expense and we generate a copious amount of paper reports."

Mandates to cut costs, trim supply budgets, and substitute source data entry for a legion of clerks reflect another aspect of dp spending—the rising tide of off-budget payments. While a 20% rule of thumb was evident a few years ago, the average organization's outside spending is expected to reach about a third of the mean dp budget of almost $1 million this year.

There is some good news for dp executives watching the flood of dollars outside of their realm: the outflow for pcs may be slowing down. Dell of Diebold estimates that the ratio of outside pc spending to the dp budgeted amount was about eight to one, but the DATAMATION survey indicates that the ratio is more like three to one this year. The discrepancy may, in part, result from the broader horizon of 1,083 users vs. the Fortune 500 focus of the Diebold studies. Indeed, the median spending level of pcs, outside of the dp budget, was about $17,500, or substantially less than the amount allocated in the mean dp budget. Subtract the personal computer from outside spending and the total falls back into the 20% level.

A smaller but significant reason for the sharp increase in off-budget spending comes from the cost of applications software. Many dp shops are not mandating which spreadsheet, word processor, or database management package must be used. "We may be spending more than we need for outside software, but the alternative, hiring a staff to evaluate packages, would result in diseconomies," notes the MIS vp of a major New York brokerage firm. The large majority of survey respondents guessed that outside applications software spending runs at least $7,000, while the mean figure of $47,100 reflects the huge costs of mainframe- and minicomputer-based packages for manufacturing, medical, and other specialized applications.

It would appear that with all the indirect costs of personal computers, peripherals, software, and supplies paid by end users, the average corporation, university, or other organization is collectively spending more on microcomputers than on mainframes this year. That's not happening, of course. IBM's 308X models are not taking a back seat to PCs. The mean numbers do not reflect the fact that there are hundreds of dp shops without a mainframe budget item, or, for that matter, a personal computer category. Among the shops with mainframes, the median budget segment is about 20%. But the trend is crystal clear—personal computers are making w in the dp budget pool. ●

The 1984 DATAMATION budget survey is for sale in report form. It contains 78 pages of statistics and an executive summary prepared by the Market Research Department, covering 1,083 data processing center sites in 12 industry categories and including spending priorities for 13 different dp budget items. Single copies are $100. For more information, contact Laurie Schnepf, Research Director, Technical Publishing Co., 875 Third Ave., New York, NY 10022.

There can be a lot more power in the promotion than there is in the program.

THE SELLING OF SOFTWARE

by Efrem Sigel

When the 100,000 subscribers to *PC World* opened their November Software Review issue, they found an unusual insertion: a bound-in envelope containing a sample disk for Microsoft's just-released word processing program, Microsoft Word. Determined to crack one of the key micro software applications markets, the Bellevue, Wash., software house figured it might as well put the program itself into the hands of its prime audience: owners or would-be owners of the IBM PC. This kind of mass sampling had never been done before, and with good reason: not only were there production problems in binding the disk into the magazine, but the cost of disks and advertising space came to an estimated $350,000.

Yet Microsoft didn't stop there in its effort to launch a winner. Since October it's been running weekly five-column ads in the *Wall Street Journal* with the headline, "Stop Feeding Your Computer Junk Food." The ad, which shows a floppy diskette tucked into a bag of french fries, derides competing programs and immodestly contends that "From the first day you feed it Word, your pc will jump into high performance." On a national basis, the *Journal* ad costs Microsoft a cool $45,000 per throw. To make sure that nobody misses the message, Microsoft's ad agency, Keye/Donna/Pearlstein, also scheduled placements in *Byte*, *Infoworld*, and various business publications.

When all is said and resaid, the advertising and promotion launch of Microsoft Word won't be far from a million dollars, probably double what it cost to develop the program. This ratio of promotion to development budgets is becoming standard practice in the business software market these days.

Sorcim, San Jose, Calif., with about $10 million in annual sales, spent $1 million in just three months this fall to introduce SuperCalc3, the latest and most souped-up version of its spreadsheet and graphics program.

VisiCorp, also of San Jose, is locked in a battle with Microsoft and Quarterdeck Office Systems, Santa Monica, Calif., for leadership in the emerging windows software field. The company said it was budgeting several million dollars for the advertising/promotion of VisiOn. That is on top of the $10 million that VisiCorp already laid out to develop the program.

Lotus Development Corp., Cambridge, Mass., which started the present promotional war with its multimillion dollar launch of 1-2-3 early in 1983, has continued to spend heavily: its measured advertising just in computer and trade periodicals came to well over $2.5 million for the year. By contrast, Lotus's total development expenditures for 1-2-3 were under $1 million, based on figures from its prospectus.

Clearly, Silicon Valley has discov-

FIG. 1

CUMULATIVE SALES FOR BEST-SELLING BUSINESS SOFTWARE PROGRAMS THROUGH 1983

PROGRAM	PUBLISHER	CUMULATIVE SALES
WordStar	MicroPro	800,000
VisiCalc	Visicorp	700,000
SuperCalc	Sorcim	350,000
PFS:File	Software Pub. Corp.	250,000
dBASE II	Ashton-Tate	150,000
Total		2,250,000

Source: Communications Trends Inc.

FIG. 2

BUSINESS/PROFESSIONAL SOFTWARE PURCHASES, 1981–84

	1981	1982	1983	1984P
		(in $ millions)		
Customer purchases	$140	$430	$936	$1,638
Publisher receipts	70	215	468	819

Source: "Business/Professional Microcomputer Software Market, 1984-86," Communications Trends Inc./Knowledge Industry Publications

The output of new titles far exceeds the abilities of retailers to stock, reviewers to review, and customers to buy.

ered—some would say fallen in love with—Madison Avenue. It's gotten so that every respectable software company needs two things: a multimillion-dollar injection of venture capital, and a multimillion-dollar ad campaign. The newly raised equity disappears so quickly into glossy magazine spreads that it surely won't be long before promoters put together a new kind of tax shelter, the limited partnership for software advertising, not software development.

Perhaps it already exists. Quarterdeck raised $5.8 million in venture capital in December for its DESQ, a windows package that competes with VisiOn, and promptly announced plans to put $3 million into marketing, of which $2 million will go for advertising. Ovation Technologies, Norwood, Calif., raised $5.5 million early this year for its highly touted integrated software package. Ovation plans an ad and promotion campaign in 1984 that will cost about $5 million, according to communications director Mark Minkin. One can only hope that when the ad directors, agencies, and media are through divvying up the spoils of these new offerings, there are a few pennies left. If so, they can be used to perfect the much-ballyhooed programs that were, in theory, the reason for these companies getting started in the first place.

It doesn't take great insight to observe that the microcomputer software industry is in the throes of a marketing revolution. The question is, will that revolution take the business to a new level, or will it wind up burying some of its most fervent proponents?

A MOST INGENIOUS PARADOX

A curious paradox is at work in the micro software field: on the one hand, the industry exhibits some of the trappings of a mass market; on the other, it continues to be a highly defined specialty business. The mass-market characteristics stem from the high unit sales being recorded by the best-selling programs. As of the end of 1983, five programs among them had sold more than 2.2 million copies, with the leader, MicroPro's WordStar, passing the 800,000 mark (see Fig. 1). In light of such sales, worth hundreds of millions of dollars, it is all too easy to lose sight of a fundamental fact: such programs are bought and used by a small minority of the adult population. While the audience is primarily business-oriented it is also composed of devoted personal computer users.

The reasons for the infatuation with marketing and advertising are understandable, which is not the same thing as saying they are valid. These reasons include the rapid growth in microcomputer sales and the attendant explosion in the number of available products; the peculiar economics of the software business, with its very high fixed costs and very low variable costs; and the sudden emergence of intermediaries (distributors and retailers) that exercise great influence over what is sold.

Microcomputer software sales have grown so rapidly that there has been a stampede of new companies—and new programs—into the market. Estimates from a recent study by Communications Trends, the Larchmont, N.Y., computer publishing industry analysts, shows that customer purchases of business/professional micro software totaled $936 million in 1983, up from barely $140 million in 1981. This year, purchases should reach $1.6 billion (Fig. 2). Publishers net only half of what customers spend, because of the high level of discounts to intermediaries.

As rapidly as the market has grown, the supply of products has grown even faster. No one can say what the output of new titles is, except that it far exceeds the ability of retailers to stock, reviewers to review, and customers to buy. Peek into the office of a software review editor at any computer magazine; you will barely see the floor for the stacks of new boxes, new manuals, and new disks that arrive daily. Talk to Softsel, largest of the independent software distributors, and you learn that it gets more than 300 new program submissions a month—and takes on only a few dozen new products. Visit a computer or software store and count the number of different programs on the shelves—it's the unusual retailer who can carry more than 200, and hardly anyone carries 2,000. Yet the count of programs that are commercially available already exceeds 35,000.

My guess is that the growth rate in title output is double the growth in industry sales, i.e., although software purchases are forecast to increase by 75% in 1984—which would be down from 1983's growth of 118%—the growth in number of programs will be more like 150%. Publishers have an ever more difficult time bringing titles to the attention of distributors, retailers, customers. Increasingly, the response is to turn up the marketing flame to try to buy that attention.

The drive to spend more affects the established publishers every bit as much as the newcomers. The last thing an established software company wants is to be knocked off its pedestal by an upstart, and since the new entrants can design programs that overcome the deficiencies of the leaders, there is all the more reason for the front-runners to erect marketing hurdles for would-be competitors.

As Fred Gibbons of Software Publishing Corp. (SPC), Mountain View, Calif., publisher of the best-selling PFS:File and related programs, puts it, the barriers to entering the software business are "marketing, marketing, and marketing." He explains that in six months, "anyone can reverse-engineer anyone else's product," whether the product is PFS:File or 1-2-3. The way to protect a position in the marketplace, says Gibbons, is to advertise and promote so heavily that the competitor cannot gain a foothold.

SOFTWARE BUSINESS ECONOMICS

How publishers deal with the oversupply of software titles leads naturally to the second reason for the emphasis on marketing: the peculiar economics of the microcomputer software business. SPC spends a whopping 40% on all marketing, 15% just on advertising and promotion. These percentages are high, but by no means atypical. Communications Trends has found that business software companies spend an average of 35% on marketing—far more than they devote to either product development (15%) or manufacturing and fulfillment (15%). Fig. 3 shows these ratios in chart form.

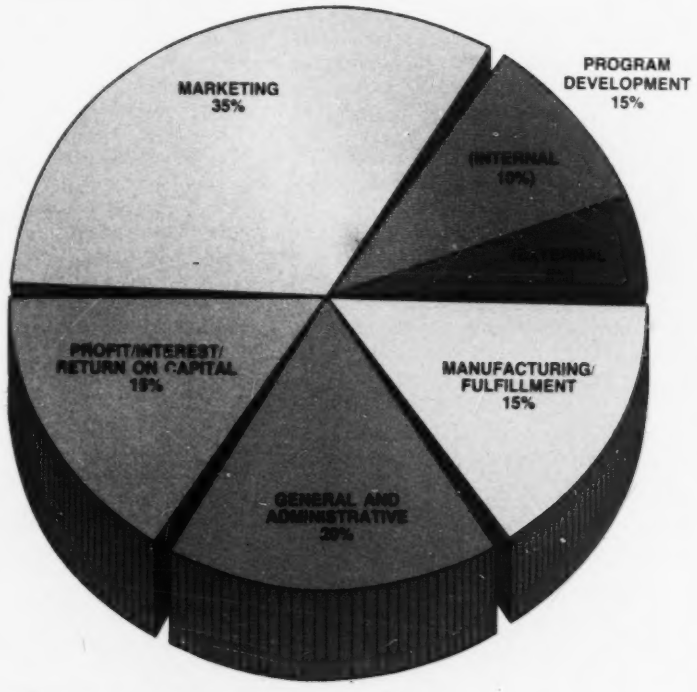
This pattern exists because business software publishing has very high fixed costs and relatively low variable costs. Once the first copy of a program is manufactured, the expense of producing additional copies is insignificant. Customers know that the manufacturing cost of a word processing or database program selling for $500 may be as little as $5 or $7. (This awareness is sometimes used to justify copying a program without compensating the producer.) What they don't know is that developing the program may have taken hundreds of thousands of dollars or years of unpaid toil by the programmer.

Nevertheless, the physical cost of making software is tiny compared to its price, which means that the gross margin on each copy sold is astonishingly high—95%, if one considers only manufacturing cost, 85% if one adds in royalties to outside authors and developers. Obviously the software publisher can afford to spend a bundle on making the sale, while retaining a very healthy portion of the proceeds.

And spend they do. Fig. 4 shows what four publicly owned micro software publishers spend on selling and administrative costs as a percentage of revenues—and what their pretax profit margins are. Lotus Development, which had such spectacular success with 1-2-3 last year, devoted more than 40% of its revenues to marketing and administrative costs, but earned an almost unbelievable 51.8% before taxes, in its first nine months of operation. BPI Systems, Austin, Texas, did almost as well, achieving a 46% pretax margin and keeping selling, general, and administrative costs to about 31%. (Its selling percentage has historically been

FIG. 1

HOW THE BUSINESS/PROFESSIONAL SOFTWARE SALES DOLLAR IS ALLOCATED



Source: Communications Trends Inc.

FIG. 4

SELLING AND ADMINISTRATIVE COSTS AND PRETAX PROFIT MARGINS FOR PUBLICLY OWNED MICRO-COMPUTER SOFTWARE COMPANIES

COMPANY	PERIOD	REVENUES (in $ thousands)	SELLING, GENERAL AND ADMINISTRATIVE COSTS	PRETAX MARGIN
Ashton-Tate	6 mos. ended 7/31/83	$18,016	38.0%	29.0%
BPI Systems	12 mos. ended 3/31/83	6,067	30.8%	45.6%
Innovative Software	12 mos. ended 6/30/83	1,685	39.0%	17.3%
Lotus Dvlpmnt	12 mos. ended 12/30/83	29,103	40.0+*	51.8%

*Estimate based on interim figures

Source: Compiled by Communications Trends Inc. from company financial reports

low because of an emphasis on oem sales to manufacturers. Now that BPI is beginning to stress sales under its own name, marketing expense is on the upswing.)

The third reason for the overwhelming emphasis on marketing by business software firms lies in the structure of the industry, specifically the key role played by a handful of distributors and by several thousand retailers.

Just as the microcomputer software industry is only five or six years old (the industry can be dated from the release of VisiCalc in 1979), so the emergence of a computer/software retailing industry is also quite recent. Softsel, of Inglewood, Calif., the largest of the independent distributors, dates from only the end of 1980; Micro D, Fountain Valley, Calif., the second largest, was founded in late 1979. Among the computer and software store chains, Inacomp, Troy, Mich., was founded in 1976; ComputerCraft, Houston, Texas, in 1977; the Program Store, Vienna, Va., in 1979; Software City, Teaneck, N.J., in 1980.

As these companies have boosted their sales of software, and as the flood of new products has yet to crest, their market power compared to the software publishers has strengthened noticeably. To make retail sales the software publishers need retail shelf space; to get shelf space they must enlist the cooperation of the chains. As an example of the economic power of a couple of key accounts, in Lotus's first six months, 37% of its sales were to ComputerLand, another 28% were to Softsel. Indeed, Softsel had an exclusive on 1-2-3 until fall '83. As another example, in November '83 Ovation Technologies received the blessing of Tandy Corp., which adopted its integrated software for the new Tandy model 2000 computer. But in order to get its program into 1,100 Radio Shack outlets, Ovation had to agree that it wouldn't ship the IBM PC version of the software until the Tandy version was also ready.

By no means do the retailers and distributors hold all the cards. Microsoft has been reducing the number of distributors that carry its software from several dozen to about six. VisiCorp, MicroPro, Lotus, and other major software publishers have been beefing up their national sales forces to reach corporate customers directly, bypassing the retailer. In the case of Lotus, the dealer can earn a commission for assisting in such a sale, but the commission can only be applied against future purchases of Lotus software.

In general, however, it's only the very largest business software firms that enjoy such bargaining power. The small- to medium-sized publishers are forced to woo the distributors and the chains. To do so they must answer the blunt question posed to new

The allure of the software business is a combinaton of Hollywood and the early days of aviation.

companies by a key manager at Micro D, "What are your advertising plans?" It's not enough for the publisher to promise a budget of 10% of sales after the sales start rolling in; show us the color of your advertising money beforehand, say distributors, if you want any sales at all.

The need to work with manufacturers, distributors, and retailers is a continuing problem for software publishers. Yet it is also one of their greatest opportunities. Perhaps the most significant asset software companies enjoy is the assistance of many independent organizations in marketing their products: distributors, computer dealers, software retailers, mail order houses, bookstore chains like Walden and Dalton, and even mass merchants like Sears and Toys-R-Us. All these companies have a stake—and a growing one—in selling as much software as they possibly can.

Everyone has seen the Little Tramp in IBM's PC ads holding up a very high, somewhat shaky pile of software products. The message of this ad is clear: there is lots of software for the PC, and a computer that offers the best choice of software is the best computer.

Not only IBM, but Apple, Tandy, Texas Instruments, Hewlett-Packard, Epson, Kaypro, and Digital Equipment Corp., all trumpet software availability as a reason to buy hardware, and provide tens of millions of dollars of free advertising for software publishers. In the process, they reinforce industry participants' suspicions that what can really count is not the product itself, but the way that product is promoted.

EFFECTIVE MARKETING SUCCEEDS

Of course, effective marketing is required to succeed in the business software field. But the software executive at a multibillion dollar entertainment conglomerate, who told me in no uncertain terms that "it's a marketing-driven business," missed the point by a wide margin. A marketing-driven business is a mature industry like the detergent or auto industries, in which teams of market researchers are forever trying out new product names and new tv commercials on panels of "representative" consumers. It's far too early for software to be developed in this fashion.

The allure of the software business is a combination of Hollywood and the early days of aviation. Important attributes are instinct, creativity, flair—and a good grasp of technology. New products come from the minds of developers, not from customer questionnaires or focus groups. Indeed, until significant new programs are actually produced, no one can envision whether they are feasible or how they will work.

Even for people accustomed to the fast-lane pace of the computer industry, time has a different meaning for software companies. A year in this field brings changes that in other industries would astound. If we look all the way back to the end of 1982, for example, we see a time in which no one was using 1-2-3; the popular business word processing program, Multimate, had yet to be introduced; Microsoft Windows was completely unknown; and pc-to-mainframe links from MSA, McCormack & Dodge, and others were an idea, not a reality.

On the surface, however, the notable changes can appear to involve the selling of software, the appointment of new ad agencies, the drawing up of multimillion dollar promotion budgets, the constant drumbeat of media hype, and the ardent courting of distributors, dealers, press, and customers.

In such an atmosphere, one can understand how some software entrepreneurs have come to believe that they exist to advertise and promote. The truth is otherwise: they are in business to create programs that do a better job for users than competing products. In their rush to raise venture capital and to pour it directly into advertising, software entrepreneurs can easily overlook this elementary function. Indeed, they are being abetted in their error by the investors that stumble over themselves to squander money in this brand-new field.

The current leaders in micro software, companies like Microsoft, MicroPro, Lotus, Digital Research, and Ashton-Tate, have quite a head start in the race to define and lead this new industry. One should never underestimate the perils of an early success, though. It has brought grief to lots of companies over the years, and there is, unfortunately, no evidence that things will be any different in microcomputer software. ●

I GOT YOUR BOOK YESTERDAY, SO I HAVEN'T HAD A CHANCE TO READ IT.
I READ SOME OF IT, BUT I HAD TROUBLE UNDERSTANDING IT.
IF I KNEW YOU'D BE HERE, I WOULD HAVE READ IT.
THIS ISN'T MY BOOK.

CARTOON BY SIDNEY HARRIS

Efrem Sigel is president of Communications Trends Inc., Larchmont, N.Y., publishers of *Computer Publishing and Advertising Report Newsletter* and *Computer Publishers and Publications Directory*.